

REMARKS

Claims 1-11 are all the claims pending in the application.

Applicant thanks the Examiner for conducting a telephonic interview with Applicant's representative on February 3, 2004. These Remarks are in reply to the Examiner's rejections set forth in the Office Action (Paper No. 7), and also serve as a summary of the substance of the February 3, 2004 interview.

The Examiner rejects claims 1-3 and 9-10 under 35 U.S.C. § 102(e) as being anticipated by, and claims 7 and 11 under 35 U.S.C. § 103 (a) as being unpatentable over, Martens et al. (Martens). Also, the Examiner objects to claim 10 due to a minor typographical error. Finally, the Examiner indicates that the dependent **claims 4-6 and 8 would be allowable** if rewritten in independent form including all of the limitations of their base claim and any intervening claims.

With regard to the Examiner's objection to claim 10, this objection is addressed above by amending claim 10 as proposed by the Examiner. Clearly, this amendment is merely a correction of a typographical error, and does not change the scope of claim 10. No estoppel is created.

With regard to the Examiner's prior art rejections, Applicant respectfully traverses these rejections as follows.

As explained by Applicant's representative during the interview with the Examiner, Applicant's invention provides an object activity modeling method which is capable of analyzing activities of complex objects such as human bodies. One aspect of Applicant's claimed invention provides an object activity modeling method comprising unique combinations of method steps including, *inter alia*,

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- (a) obtaining an optical flow vector from a video sequence;
- (b) obtaining the probability distribution of the feature vector for a plurality of video frames, using the optical flow vector;
- (c) modeling states, using the probability distribution of the feature vector; and
- (d) expressing the activity of the object in the video sequence based on state transition

(Applicant's independent claim 1).

Another aspect of Applicant's claimed invention provides an object activity recognition method comprising unique combinations of method steps including, *inter alia*,

- (a) obtaining feature vectors by motion estimation for video frames;
- (b) determining a state, to which each frame belongs, using the obtained feature vectors; and
- (c) determining an activity model, which maximizes the probability between activity models and a video frame provided from a given activity model dictionary using a transition matrix for the determined state, as the recognized activity

(Applicant's independent claim 9).

Martens, the only reference applied by the Examiner, is in the field of motion estimation in signal records, and provides a method of estimating motion between one reference image and each frame in a sequence of frames based on "Principle Component Analysis" of the "motion matrix" (see *Id.*, Abstract). In particular, Martens discloses a method where "[c]oordination of motion estimation over several frames are [sic.] attained by approximating the motion estimates by bilinear modeling" (see *Id.*, col. 3, lines 10-12; see also, col. 7, line 34 through col. 11, line 35). As the aspect of Martens' bilinear modeling is conveying information from other frames to

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an individual frame during motion estimation “in the shape of a bilinear prediction hypothesis” (see Id., col. 11, line 60 through col. 13, line 19; and Fig. 7).

As noted during the Examiner Interview, some of the unique features of Applicant’s claimed invention are “obtaining the probability distribution of the feature vector for a plurality of video frames, using the optical flow vector; [and] modeling states, using the probability distribution of the feature vector” (claim 1), and “determining an activity model, which maximizes the probability between activity models and a video frame provided from a given activity model dictionary using a transition matrix for the determined state, as the recognized activity” (claim 9). The Examiner alleges that these features correspond to Martens’ “hypothesis” generation (see Office Action, paragraph 3, citing Martens’ Fig. 7).

Applicant respectfully disagrees for the reasons discussed during the Examiner Interview. In particular, Martens’ “bilinear prediction hypothesis” has nothing to do with “obtaining the probability distribution ...”, as claimed in Applicant’s claim 1, or “determining an activity model, which maximizes the probability ...”, as claimed in Applicant’s claim 9. That is, Martens explicitly discloses that “Hypothesis Reflects the Assumed Probability Distribution of the Expected Result” (see Id. col. 12, lines 58 and 59, emphasis added). Clearly, “assuming” the probability distribution does not suggest, and is quite contrary to, obtaining the probability distribution, or determining a model which maximizes the probability, as required by Applicant’s respective claims 1 and 9.

Therefore, Applicant’s independent claims 1 and 9, as well as the dependent claims 2, 3, 7, 10 and 11 (which incorporate all the novel and unobvious features of their respective base

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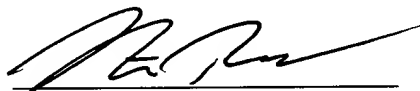
claims), are not anticipated by, and would not have been obvious from, Martens at least for this reason.

At the conclusion of the interview, The Examiner agreed to reevaluate his rejections.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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